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O V E R C O M E

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The **global** HIV and **AIDS** epidemic—a **rapidly expanding scourge** that has infected cumulatively 58 million people, killed nearly 22 million of them, and left behind more than 13 million orphans—began its onslaught slowly and **stealthily**.

Many scientists now believe the virus entered the human population, most likely from monkeys, sometime in the 1940s or 1950s. The effects of the disease, like no other we have ever encountered, do not become apparent for as long as ten years, so by the time doctors began to broadly notice, the virus was deeply entrenched in the human population.

We know now that, by the late 1970s, HIV was spreading through Africa and Europe, but it first came to medical attention in the United States and France. In 1981, several doctors in San Francisco and New York City became alarmed. Young male patients, all homosexuals, were coming down with Pneumocystis carinii pneumonia and a cancer called Kaposi's sarcoma, **diseases not usually seen in people with strong, healthy immune systems**.

As more and more young men succumbed to this mysterious affliction, doctors and medical researchers around the world rushed to find out what it was. The answer was frightening—

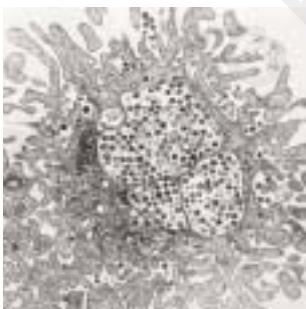
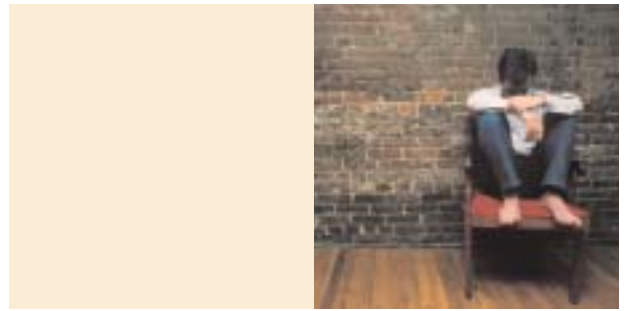
a virus that attacks the cells of the human immune system, the elaborate and sophisticated mechanism we have always depended on to protect our bodies from foreign invaders.

It was soon evident that this new invader, eventually named the human immunodeficiency virus, or HIV, was the most devastating microbe humankind had ever encountered. It so weakened the immune system that other diseases, easily kept in check by healthy internal defenses, were eventually fatal in almost everyone with HIV in their bodies.

This final stage—sickness and then death from a variety of causes—became known as acquired immune deficiency syndrome—

AIDS.

The answer was **frightening**—a virus that attacks the cells of the human **immune system**.



Let us remember that every person who is infected is a fellow human being, with human rights and human needs.

Top row:
An AIDS patient ponders his fate outside a hospice facility in New York City.
Second row:
Indian prostitutes distribute red ribbons during an AIDS Awareness campaign in Calcutta, 2001.
Third row:
Left: A social worker holds the hand of an AIDS patient, giving comfort and support.
Right: In 2000 a list of AIDS victims is read during World AIDS Day, New York City.
Fourth row:
A microscopic image of a cell with the HIV virus responsible for AIDS.

“The human
immunodeficiency virus,
in enlisting our very immune system
to destroy us,
represents the most formidable
natural challenge
ever mounted to the
existence of our species.



This is what puts AIDS in a class by itself.”

Robert Searles Walker

A I D S : T o d a y , T o m o r r o w

Doctors treating these first patients began immediately to analyze the most puzzling aspect of the cases: a severe impairment of the immune system. What they found in each of these young men was a rapid, continuing decline in the number of blood cells

called helper T lymphocytes, on whose surface are located CD4 molecules. These CD4-positive cells are essential components of the human immune system, armed to fight off everything foreign they find within the body.

So long as this new disease was confined to male homosexuals, those searching for its origin were stumped. Then it started showing up in intravenous drug users and hemophiliacs. This told researchers that it was almost certainly transmitted through blood. But what was it? And would it be found in other fluids in the body? They kept looking.

By 1983, the likely cause had been found at the Institut Pasteur in Paris and then confirmed by the National Cancer Institute in Washington, D.C. It was the HIV virus that had been spreading undetected, scientists later learned, for at least 30 years, and had already infected millions of people worldwide by the time it was discovered.

Its rapid and extensive spread had been made possible by changes in human activity during the 20th century: the huge numbers of people coming into contact with new and non-endemic diseases all over the world; the increase in individual sexual activity, especially with multiple partners; the use of unscreened and contaminated blood and blood products in medical transfusions; and, the use of unsterile syringes, including those used and shared among illegal drug users, as well as the increased use of illicit drugs and the switch from inhaling to injecting them.

Although HIV was first discovered among male homosexual populations, by far the most common way it is spread worldwide is through heterosexual partners.

The second most prevalent means of transmission is through syringes shared among intravenous drug users or through syringes used by improperly trained personnel in hospitals and clinics. Those contaminated—both male and female—then pass the virus along to their sexual partners.

Transfusion of HIV-infected blood is another method causing the spread of the virus from one person to another. In the earliest days of the epidemic, thousands of people received HIV in this way. However, since 1985, when donated blood began to be routinely tested and then given the proper treatment before use, the risk of new infections through transfusion or the receipt of blood products has been greatly reduced in developed countries. Developing countries are working hard to make their donated blood safe as well.

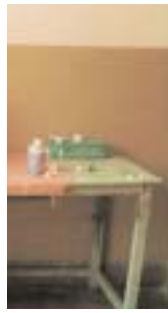
In spite of the enormous fear created when the epidemic first began, HIV cannot be spread except by passing one of the body's fluids, primarily blood, semen, or vaginal secretions, into another person. There is no evidence that HIV has been transmitted in casual social situations, by touching, through air, food, or water, or by insects. No known cases of AIDS or HIV infection have resulted from sharing kitchens, bathrooms, laundries, eating utensils, or living space with an HIV-infected person.

The HIV/AIDS epidemic has stabilized in recent years in the United States, with about 900,000 people now infected. However, it is continuing to spread rapidly around the world, concentrated to a considerable extent in sub-Saharan Africa. According to the latest figures from the United Nations, some 29.4 million sub-Saharan Africans have HIV or AIDS. This represents approximately 70 percent of all the known cases in the world. About 570,000 people in Western Europe, 1.5 million in Latin America, and another 440,000 in the Caribbean are infected with HIV.

Large-scale HIV infections involving as many as 8.4 million more are already entrenched in Thailand, Cambodia, and India, and are now becoming evident in such places as China, Indonesia, Nepal, Vietnam, and the countries of the former Soviet Union.

In 2002 alone, five million additional people were infected—more than 15,000 every day—of whom about half are between the ages of 15 and 24. And in that year, almost 3.1 million died of AIDS, 2.4 million of them in sub-Saharan Africa.

Clearly, HIV is the most dangerous and insidious viral enemy the human race has ever faced. What is it about this tiny microbe that makes it so devastating?



Top row:

A woman in Bombay, India, has her blood drawn to test for HIV after her husband began to show symptoms of the disease.

Second row:

Left: A heroin addict sits in a drop-in center in Haiphong, Vietnam. Seventy percent of intravenous drug users in Haiphong are HIV positive according to local health authorities.
Right: In Port-au-Prince, Haiti, AIDS sufferers gather together.



"We are not fighting for a few more years, or a buoyant feeling of energy and good health, we are fighting for our very lives."



Third row:

In order not to be expelled from Vista Hermosa, south of Bogota, Colombia, this man is being tested for AIDS. The guerrilla army is forcing all residents in this town to undergo AIDS blood tests.

Fourth row:

Left: Units of blood donated to the American Red Cross in Arlington, Virginia.

Right: In Durban, South Africa, Nomusa Duma, who is HIV positive, manages her household and tends to her daily chores even though she is confined to a wheelchair.

The **best advice** anyone can receive when faced with a powerful adversary is “**Know your enemy.**”

This has never been so true as with HIV and AIDS.

The **more we know**—scientists and citizens alike the more able we are to combat it. Perhaps just as

important, understanding something inevitably makes it less fearsome. No matter how dreaded the foe, familiarity takes away some of the terror.

To begin with, viruses are the smallest and simplest of biological entities. Viruses are not alive in the usual sense; they are just tiny packages of genetic instructions. They are unable to function on their own and require the energy and protein-producing machinery of host cells in order to make copies of themselves. **Outside a cell, viruses are inert (inactive), but once they are inside, they go right to work. The way HIV does it is this:**

When an HIV particle, introduced into a human body, encounters a cell, the virus binds itself to that cell's CD4 molecule and then invades the cell. The genes in the human host cells are made up of DNA, but HIV's genes are made up of RNA. So, HIV carries an enzyme called reverse transcriptase that converts its RNA to DNA. Until these retroviruses were discovered, biologists had always believed that the direction of flow during protein synthesis had to be DNA to RNA to protein, not this reverse or “retro” direction.

A second enzyme (integrase), and a third enzyme (protease) facilitate the formulation of mature infectious particles, called virions, that are sent off to find and infect other cells.

HIV is a lentivirus, which means its full effect unfolds slowly. The time between initial infection and the onset of serious symptoms can be ten to twelve years. During this time, the infected person may look and feel perfectly well, but a fierce battle is raging inside his or her body. Each day during this asymptomatic period, in just that one person, billions of HIV particles are being destroyed by the immune system but to no avail. The virus keeps producing billions more to take their place.

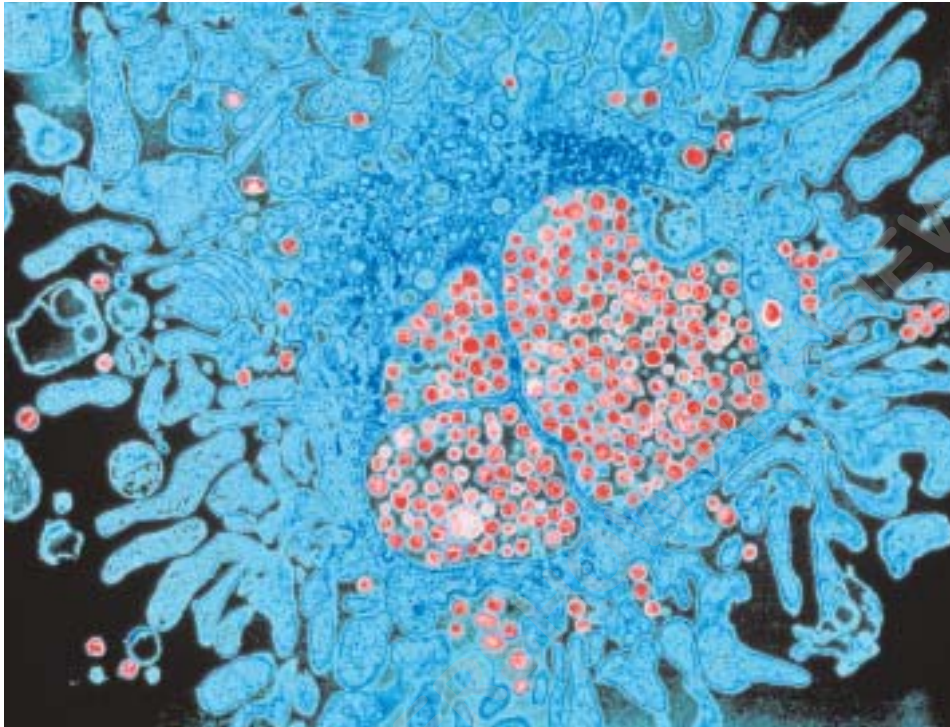
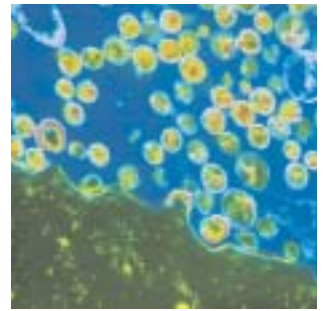
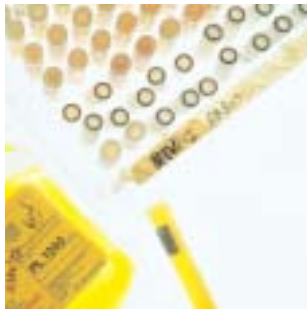
HIV replicates so fast that as many as ten billion new HIV virions can be produced in an infected person every day. Gradually, more HIV is produced than is destroyed, and more CD4 cells are destroyed than can be replaced. **Eventually, some years after initial infection, the immune system is finally overwhelmed by HIV,** and its ability to make more CD4-positive T lymphocytes and thus fight off infections is seriously impaired. AIDS is diagnosed when the number of CD4/T cells drops below a certain number.

Once a person's immune system becomes too weak to keep fighting, other infections begin to take hold. These are called opportunistic infections. **Death usually will be caused not by HIV itself, but by one or more of these other opportunistic diseases.**

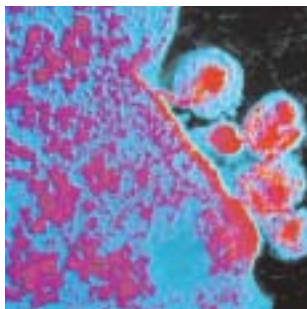
Another startling fact about HIV is its unparalleled ability to change or mutate. These mutations arise largely because the reverse transcriptase enzyme makes constant errors as it creates DNA copies of the virus's RNA and has no self-correcting mechanism, as does our own DNA. The number of errors can be quite large—during the replication cycle of a single particle, as many as ten to twenty mistakes can be made. With billions of virions being produced in each person every day, the rate of change is staggering. The most successful of these mutations survive and flourish.

In spite of all this, HIV itself is a rather delicate organism, highly susceptible to drying and to sunlight. **Because it cannot survive for long in the hostile environment outside the human body,** it has adapted to primary transmission routes that take it directly from one body to another—of these, the most universal is the sexual route.

The infected person may look and feel perfectly well, **but a fierce battle is raging** inside his or her body. Eventually, some years after initial infection, the immune system **is finally overwhelmed by HIV.**



“HIV does not seek to harm,
but it does not seek not to
harm. A virus does not know
or care.”



Top row:
Left: Telltale yellow serum samples
labeled HIV positive.
Right: Green circular viruses
(HIV/AIDS) bud from the surface
of a lymphocyte.

Second row:
Color enhanced transmission electron
micrograph of a virus producing cell.
The segmented vacuole inside the
cytoplasm is filled with HIV particles
that attack T-lymphocytes and replicate
within them.

Third row:
Two Russian lab technicians test
blood for the AIDS virus at the
Institute of Immunology in Moscow.
The test tubes and lab equipment on
the table are used in their research.

Fourth row:
AIDS virus particles budding from
the plasma membrane of an infected
T4 lymphocyte, a white blood cell.

The **great danger** in attitudes of aversion and stigmatization is this truth: **The only thing more deadly than HIV itself is ignorance about it.** At the present time, with **no vaccine or cure** for HIV/AIDS available, and appropriate treatment lagging behind

need, the best real hope for slowing the spread of the epidemic is education and prevention. This is a goal well within our reach. Extensive research during the past 20 years has taken the mystery out of the disease. We know how the virus that causes the disease is transmitted: through sex, through the sharing of unsterile syringes, through unsafe blood transfusions, and from pregnant HIV-positive mothers to their infants.

There are preventive measures for each of these ways of transmission. Abstinence, of course, prevents the spread of HIV/AIDS. The widespread use of condoms with effective and widely available prevention information can restrict the spread of the disease. Some countries have used harm-reduction programs that make available to intravenous drug users both sterile syringes and drug treatment programs to reduce the incidence of AIDS.

Virtually all countries have become aware of the dangers of contaminated blood and are now routinely testing their donated blood before use, some more successfully than others. A regimen of AZT or nevirapine at the time of birth can reduce the number of infections in babies by as much as two-thirds from mother-to-child transmission. Both these methods, testing donated blood and the AZT or nevirapine regimen, have recently seen widespread reductions in cost. The U.S. announced its \$500 million Mother-to-Child Transmission Prevention Initiative to make treatment more widely available to mothers, infants, and families in 12 countries in Africa and the Caribbean.

"A country in which denial flourishes is a country whose citizens are vulnerable to the silent spread of HIV," says the Year 2000 *Report on the global HIV/AIDS epidemic* from UNAIDS, the Joint United Nations Program on HIV/AIDS. "Until political figures and respected community leaders speak out and break the wall of silence, there is little hope of mounting a vigorous, broad-based effort against the epidemic."

When this silence is breached, what are the things that need to be said?

First, certain truths, which may differ slightly from country to country, must be admitted: that although abstinence, fidelity, and delayed initiation of sexual activity are promoted, people do indeed

have sex before they are married and, after they are married, with people other than their spouses; that same sex partnerships, particularly between men are prevalent; and that in all instances both people involved need to protect themselves from HIV. One effective way is to use a condom. Condoms are not absolutely certain to stop the spread of HIV, but recent studies have shown that if used properly, they work at least 85 percent of the time. In places where this message has been passed clearly and widely, and where at the same time, condoms have been made easily available, either free or at low cost, HIV infection rates have declined dramatically.

Second, those who inject drugs need to understand that the danger comes from tiny amounts of blood left on or in a dirty syringe not just by the person who used it last but also by anyone who has used the syringe since it was last sterilized. According to studies conducted in the United States on people who share or reuse syringes, providing them with sterile syringes is an effective preventive measure; these programs can significantly reduce new HIV infection among drug users without encouraging the use of drugs. The rate of HIV transmission was reduced by 60 percent within three years among participants in five experimental syringe-exchange programs in New York City.

An excellent lesson in the value of prevention can be found in the population of homosexual men in the United States among whom the epidemic was first discovered. As soon as the cause and methods of transmission were made known, the gay community immediately launched massive educational campaigns to get the message out. Condoms were made available wherever gay men gathered. As a result, risky behavior was substantially reduced and the rate of new infections plunged, from a peak of 150,000 a year in the mid-1980s to less than 40,000 every year during the 1990s. These prevention efforts, together with more and more effective treatment with newly discovered drugs, led to a steep drop in the number of AIDS-related deaths per year in the United States—from 50,000 in 1995 to fewer than 20,000 in 1999.

So we must persevere—**speaking out, educating, halting the spread** wherever we can. If enough transmissions of HIV can be **prevented**, the disease will have trouble maintaining itself in the population.



Top row:
A needle exchange program is carried out in Amsterdam.

Second row:
An employee of an AIDS center in St. Petersburg, Russia, is besieged by young people as she hands out free condoms.

Third row:
Left: In The Gambia, a health worker explains an AIDS awareness leaflet.
Right: Former Ghanaian president Jerry Rawlings talks to HIV-positive orphans at a children's home in Nairobi.

Fourth row:
Eleven-year-old students from Bang Loa School in Chiang Rai, Thailand, project growth statistics in AIDS.



We must persevere—
speaking out, educating,
halting the spread
wherever we can.



Be safe.

In the **early years** of the epidemic, the onset of AIDS led **invariably** to death. Once the opportunistic diseases began to appear, death was only a matter of **time**—from a year to 18 months, in most cases. However, researchers around the world

were hard at work, searching for ways to slow, or even stop, the progress of HIV before it reached the final, fatal stage.

These scientists carefully analyzed each step in the replication cycle of HIV, looking for vulnerable points at which the right drug might be able to disrupt that cycle. What they needed were molecules that closely resembled the natural building blocks the virus must have in order to manufacture copies of itself. These deceptive molecules, called analogs, would be taken up by the virus as if they were the natural material itself. But the analogs would be changed just enough to obstruct the process, halting it at that point, thus keeping the virus from replicating.

An obvious target was the enzyme reverse transcriptase.

If a way could be found to keep the virus from converting its RNA into DNA, it would be unable to use new human cells to make more copies. Researchers discovered that an old cancer agent, AZT, did just that, through a process called chain termination.

Think of beads in a necklace with hooks on both sides. AZT is a bead with only one hook. It attaches to HIV's growing chain of DNA but has no way of accepting the next bead, or nucleotide. Therefore, the incomplete chain is terminated.

Treatment with AZT showed immediate and encouraging results. Then the effect seemed to wear off. The reason was the astonishingly rapid rate at which HIV-infected cells mutated—making millions of mutations a day in each infected person. Out of all the mutated virions being produced, some were developing a resistance to AZT. Those virions affected by the drug were dying off, but the resistant ones were flourishing. In time, these mutations came to predominate in the patient, and the treatment became ineffective. Researchers found that resistance inevitably developed to any single drug.

With other reverse transcriptase inhibitors being discovered and produced, doctors began trying combinations of two. No luck. HIV kept spewing out drug-resistant mutations.

Everything changed late in 1995, when a new class of drugs, protease inhibitors, began to be approved for use. These drugs bind to the enzyme

protease and keep it from converting newly formed, non-infectious particles into mature, infectious HIV. Researchers tried combining these new drugs with the older ones in a “triple cocktail.” The results were stunning: The amount of virus in the blood dropped rapidly and resistance did not develop. The reason for this success is that the chances of HIV producing three specific and simultaneous mutations resistant to three different drugs are more difficult and usually occur over a longer period of time.

Many people on this triple therapy began regaining their normal health and vigor, while their levels of HIV infection dropped so low as to be undetectable. With almost 20 different drugs now available in Europe and the U.S., doctors have considerable leeway in tailoring cocktails suited to specific patients. Those who do not respond well to one combination can be given another.

Triple therapy that includes a protease inhibitor allows the body to clear 90 to 95 percent of its HIV infection over a one- to two-year period. Removing that final amount of the virus, hidden within cells, is something scientists do not yet know how to do, which means patients must continue taking these drugs indefinitely. If they stop for more than short periods (in some cases up to a year), the residual HIV will immediately begin to replicate. However, newer treatment protocols are lengthening these periods of drug holidays, allowing for broad uses of drug combinations in developing country settings.

Other kinds of drugs—fusion inhibitors that prevent HIV from attaching to a host cell, integrase inhibitors that keep it from integrating with the cell's genome—are being developed. How successful they will be remains to be seen. Researchers are hopeful.

Even where there is hope, there are also serious drawbacks. One is the side effects the drugs already in use often cause, ranging from the unpleasant to the downright agonizing. They include increases in blood sugar, fatigue, depression, unusual redistribution of body fat, nausea, diarrhea, liver damage, kidney stones, and crippling pain in the hands and feet.

Another drawback, although newer protocols are making drug regimens less rigid, is that each patient must be closely monitored to avoid the development of drug resistance.

Ominously, a drug-resistant strain created in one person would be equally resistant to those same drugs in any other person unfortunate enough to receive it. ☹️ What we need, most of all is an **effective vaccine**.



Researchers around the world are searching for ways to slow or even stop the progress of HIV.



Top row:

The anti-retroviral drugs pictured here are a treatment to delay the onset of symptoms in people with the AIDS virus.

Second row:

Left: Indian scientist Krishna Adarkar tests a life-saving drug at the Cipla facility in Bombay. Right: AIDS researcher and *Time* magazine's person of the year for 1996, Dr. David Ho, believes it is possible to eradicate HIV with drugs.

Third row:

At Harvard, Madisa Mine and Matt Russell analyze DNA that will be used to produce proteins for a candidate HIV vaccine.

Fourth row:

Although it may take years, Dr. Flossie Wong-Staal believes that gene therapy could provide the best AIDS treatment of all.

Fifth row:

Dr. Anthony Fauci, head of National Institute of Allergy and Infectious Diseases (NIAID), says that the best hope for preventing the further spread of AIDS lies in the development of a vaccine.

An **AIDS vaccine** is urgently needed in a world where **over five million people** are newly infected with HIV every year. However, as we have discovered during the past 20 years, **nothing about HIV or AIDS** is ever easy. In vaccine research, as with all other aspects

of this disease, there are problems. Vaccines have always worked, in the past, by stimulating a rapid and effective response by the human immune system to an invading pathogen. But HIV's whole method of operating is to attack, weaken, and destroy that system, killing the very cells a vaccine ought to strengthen. This is forcing researchers to take a whole new look at what a vaccine can be—and how much it has to do to be considered a success, especially where the virus appears in varying strains and mutates rapidly.

Designing a vaccine for a virus that is so highly variable and so efficient in its ability to escape the immune response of the host is a challenge that is both unique and highly complex. But, even though the task is a daunting one, great strides are being made. The first human trial of a vaccine to prevent HIV was conducted in the United States in 1987. Since then, more than 30 small-scale trials have been conducted around the world, almost half of them in such developing countries as Brazil, China, Cuba, Thailand, and Uganda. Thousands of healthy volunteers participated in these trials, which showed that the candidate vaccines were safe and that the immune responses they induced might be able to protect people against HIV infection.

The first large-scale HIV vaccine trials, designed to tell researchers whether the candidate vaccines do, in fact, provide protection against HIV, were begun in 1998 in the United States and in 1999 in Thailand. The results of those trials, which involve 8,000 healthy volunteers, indicate that the vaccines are safe, but they have yet to be proven effective, although some early promise is being demonstrated from preliminary studies. Still other candidates are being developed, in preparation for small-scale, then large-scale evaluation.

What makes trials in different countries so essential is the fact that we are not fighting a single virus here. HIV has, by now, mutated into a wide variety of distinct subtypes, some of which are more prevalent in certain countries, some in others. Different types of candidate

vaccines will have to be tested against these various subtypes in multiple vaccine trials, conducted in many parts of the world.

"Most likely," says the UNAIDS report, "the initial HIV vaccines will not themselves be 100 percent effective in preventing the diseases, but would have to be delivered as part of a comprehensive prevention package. What is important now is to ensure that countries where there is an urgent need for HIV vaccines participate in the global effort to ensure that a vaccine appropriate for their use is developed."

One of the most important players in this effort is the New York-based International AIDS Vaccine Initiative (IAVI), a nonprofit venture capital fund. The group has put together more than \$230 million in donations, which it has begun to invest in research projects on several continents. Its primary goal is to make sure that any successful vaccine will be made available promptly—and at affordable prices—and that it will specifically treat those strains of the virus pertinent to those parts of the world hardest-hit by the epidemic.

IAVI hopes to have eight to twelve vaccines in development by 2007. Clinical trials have begun in Kenya for the first of these, and early results are encouraging. This candidate is an experimental approach called a "DNA vaccine," which is made by splicing several of HIV's genes into rings of harmless bacterial DNA. Once the vaccine is injected into a person, researchers hope, these rings will enter host cells and begin producing the proteins necessary to stimulate a protective immunity against HIV.

DNA vaccines have a number of advantages over other types of HIV vaccines. They may be safer for individuals with suppressed immune systems, they are easier to prepare, and they do not require refrigeration. For these reasons, it may be possible to produce DNA vaccines in large quantities and distribute them worldwide at a reasonable cost.

A more conventional candidate, produced by the VaxGen company in California, is now in the midst of large-scale testing in human volunteers. During the past three years, the company has inoculated 8,000 people in the United States, Europe, and Thailand. These trials are scheduled to run for another one to two years.

No one expects the **first generation** of HIV/AIDS vaccines to work perfectly. But with nearly **14,000** people worldwide becoming **infected every day**, even a partially effective vaccine could make a huge difference.



Designing a vaccine for a virus that is so highly variable is a challenge both unique and complex.

Top row:
Left: At the University of Capetown Medical School, AIDS vaccine research is funded by the William Gates Foundation.
Middle: AIDS vaccine is drawn from a vial by syringe. Right: In Moscow, a Russian researcher develops tests for the AIDS antibody at the Epidimological Center.

Second row:
Left: The AIDSvax vaccine, the first to reach large-scale testing, is administered in San Jose, California, in 1999. Right: At an AIDS vaccine clinic in Nairobi, Kenya, funded by the International AIDS Vaccine Initiative, a young woman receives treatment and advice.

Third row:
Working to create a vaccine to prevent AIDS, Dr. Norman Letvin of the Harvard Medical School, is optimistic about his research in immunology.

Fourth row:
Kenyan scientist Dr. Julius Oyugi prepares blood samples for the Kenya AIDS Vaccine Initiative, an eight-year study developed by Kenyan and British scientists.

The world has begun to respond, in some places vigorously and successfully, to the growing threat of this global epidemic. 🌍 In June 2001, the United Nations General Assembly held an unprecedented special session on **HIV and AIDS**—the first ever on a health issue.

At the end of the session, the Assembly adopted a “Declaration of Commitment,” which calls on member nations to set specific timetables for reducing the prevalence of HIV and AIDS, to set national prevention goals, to reduce the number of infants infected with HIV, and to guarantee that at least 90 percent of young men and women have access to information about how to avoid HIV infection.

Since 1998, the government of Brazil has been producing generic versions of antiretroviral drugs and distributing them, free, to all Brazilians who need anti-HIV therapy—about 90,000 at last count. The effort has significantly lowered the cost of these drugs, which at the time were as much as \$13,000 a year in the United States. The cost of triple therapy in Brazil is already down to about \$3,000 a year and could go to \$700 or even lower.

In 2000, UNAIDS introduced a new initiative to enhance access to HIV/AIDS care and treatment.

The Accelerating Access Initiative represents a redoubling of efforts by UNAIDS to assist countries in implementing comprehensive packages of care for their citizens living with HIV/AIDS. It includes UNAIDS’ advocacy and policy guidance on HIV care at the global level and also involves “fast track” support for those developing countries who have formally indicated that they wish to significantly expand access to HIV care, support, and treatment, and who want assistance from UNAIDS. The Access Initiative has helped to reduce the price of antiretroviral drugs to approximately \$350 per year.

Uganda has also benefited from a forceful government-led attack on HIV and AIDS. The country began its program in the early 1990s, when about 14 percent of the adult population was already infected. Now the figure is down to eight percent and falling. This success came, says Dr. Bernhard Schwartlaender of UNAIDS, “because of a strong commitment by their national and local leaders.”

Uganda’s President Yoweri Museveni saw that education in ways to prevent HIV was imperative. A coalition that included religious leaders and community development organizations was able

to override religious and cultural taboos and start talking openly about sex—including an explicit radio program called “Straight Talk.” Condoms were made widely available. A special group was formed to take the word directly into the homes of Muslim families. The

message got through. Surveys show that 90 percent of Ugandans now know how HIV is spread and what they can do to avoid it.

Elsewhere in Africa: Botswana, where more than 38 percent of adults are believed to be HIV-positive, has begun offering free triple therapy treatment in public hospitals. The government hopes soon to be treating as many as one-third of those living with AIDS.

Senegal’s prevention program has increased the number of condoms distributed or sold from 800,000 in 1988 to nine million in 1997.

In Malawi, a National Orphan Care Task Force has helped community-based groups set up childcare centers for orphans of those who have died of AIDS.

A telephone hot line in South Africa that discusses sexual issues is receiving more than 80,000 calls a month.

In Rwanda, a national radio program, on which both President and Mrs. Kagame have appeared, is helping to break the silence and educate youth on the dangers of HIV and AIDS.

In 1991, Thailand’s Prime Minister Anand Panyarachun declared HIV prevention a national priority. Spending on education and prevention rose from under \$700,000 in 1988 to \$82 million by 1997. The government set one clear objective—to lower the rate of transmission through commercial sex. The aims of the “100% condom program” were to increase condom use, make condoms available everywhere, and make condom use socially acceptable.

It worked. The rate of condom usage among sex workers soared from about 14 percent in 1988 to more than 90 percent by 1992. Public health officials estimate that the prevention campaign has resulted in approximately 200,000 fewer infections.

Elsewhere in Asia: The epidemic is slowing in Cambodia. The number of HIV-positive adults between 15 and 49 fell from 210,000 in 1997 to 160,000 in 2001.

The government of China, where almost 70 percent of those infected with HIV are intravenous drug users, has launched a five-year plan to cut the rate of new HIV infections.

Vietnam reports what may be a unique approach. In the port city of Haiphong, barbers and shoeshine boys are being trained as AIDS educators by the nonprofit organization Family Health International. The government is also setting up programs to educate illegal drug users about the implications for HIV/AIDS transmission and the health risks they are facing.

These countries are showing the way through concerted political will. **Education. Prevention. Care and treatment.** A multitude of programs that **get the message out.** These are the keys to stopping the spread of AIDS.



Therapies, education, prevention. Get the message out. Stop the spread of AIDS.



Top row:
As a mother looks on, AIDS researchers at the Koumassi Clinic in Abidjan, Ivory Coast, weighs her baby. Thirty percent of women refused free HIV testing offered by the clinic.

Second row:
Women arrive at the new AIDS Information Center in Kampala, Uganda.

Third row:
A counselor in Johannesburg takes a call at South Africa's AIDS Helpline.

Fourth row:
Brazilian women pack AIDS drugs at the Far-Manguinhos drug lab in Rio de Janeiro. The drugs will be used as part of Brazil's new AIDS program.

Fifth row:
Homeless HIV-positive women in Cambodia receive medicine from a local aid agency, Indradevi.



World
AIDS Day
December 1st



Because there is no cure for HIV/AIDS, getting ready to die was once all most people with HIV infection could do. This is **changing**, and those who are receiving treatment that keeps them alive are now going back to school, back to work, **getting on with their lives**.

Not that this is easy, by any means, but it is getting better. Treatment regimens are becoming gradually less complicated and much more accessible. Yet persons living with HIV/AIDS still have to be absolutely certain to follow their treatment regimens *exactly*, which means having the appropriately trained health-care network close by to monitor for the development of resistance or for side effects of the treatments. It also means trying to get enough exercise and rest, following a nutritious diet, and avoiding sources of infection as much as possible.

Where stigmatization or severe illness persists, problems can be financial and social as well as medical. Many survivors find themselves with reduced incomes, or no income at all, often with large medical bills to pay. Those who are ostracized by family and friends may find themselves alone at the most difficult time imaginable. But more and more organizations are available to provide care and support to those in need.

One solution to the social, though usually not the financial, problems is to find others in the same situation. **A great many associations of people living with HIV and AIDS have sprung up around the world to provide psychological and social support.** They give survivors something essential: somewhere to discuss their experiences and problems openly—and safely—with people who are sure to understand.

Those with access to computers can find information and support over the Internet. On its Web site—www.beingalivela.org—a group called Being Alive, the “People with HIV/AIDS Action Coalition” in Los Angeles, California, states its purpose very well: “Bringing people living with HIV/AIDS out of seclusion into a supportive, self-empowering community.”

Others are GNP+, the Global Network of People Living with HIV/AIDS, with regional secretariats for Asia/Pacific, the Caribbean, Latin America, North America, Europe, and Africa, at www.gnp-plus.net; the National Association of People Living with HIV/AIDS, which has chapters in a number of countries, at www.napwa.org; and the International Community of Women Living with HIV/AIDS at www.icw.org.

Many of those with HIV unexpectedly find themselves with years of basically good health ahead and have decided to spend time helping others infected with HIV.

Michael Mancilla, diagnosed with AIDS in 1997, is a social worker with the Washington, D.C., Commission of Mental Health Services. He spends his days driving around the city checking on treatment programs for the mentally ill. Also, he serves on the boards of two AIDS organizations and helps organize fundraising activities. He has written a book about his experiences with HIV-positive patients.

Phill Wilson, a resident of Los Angeles, California, has been living with AIDS since 1990. In an effort to keep ignorance about HIV and AIDS from continuing to kill so many young black Americans, he founded the African-American AIDS Policy and Training Institute, which is working to come up with prevention messages and activities tailored specifically to the realities of African-American life.

In Malawi, Catherine Phiri tested positive for HIV in 1990, after her husband had died of AIDS. Soon, she was forced to quit her job as a nurse and was told by her relatives she had to move away.

These experiences made her determined to do something to help others. She organized a group that offers counseling, places orphans, and draws blood to be tested at the local hospital. In October 2000, Phiri was given an award for her work by the United Nations.

Major Rubaramira Ruranga of Uganda used to be a rebel fighting to oust Idi Amin. Now he helps people fighting HIV and AIDS. When he learned in 1989 that he was HIV-positive, “I gave up hope,” he told *Time* magazine. But then “I realized I was not going to die in a few years. I was reborn, determined to live.” He organized a network for those living with HIV and AIDS in Uganda, “so that people had somewhere to go to talk to friends.”

Patinya Noyphon, a citizen of Thailand, also found out she was HIV-positive when her husband died. This was in 1996. The next year, she joined a network of AIDS patients who give counseling to those infected with HIV. The network recently formed a partnership with the Red Cross and will work to encourage more HIV-positive people to help take care of others.

Counseling. Support. Networks. There are **thousands** more stories like these around the world—**people learning** not how to die, but **how to live**.



People learning to live with AIDS need counseling and support, both social and psychological.

Top row:
Phil Wilson is viewed as one of the most powerful and articulate spokespersons addressing HIV/AIDS in the African-American community.

Second row:
Left: In South Coast Township, South Africa, an AIDS hospice team bring food and medicine to a young child orphaned by AIDS. Right: HIV/AIDS counselor and client confer at an HIV/AIDS clinic in Harare, Zimbabwe.

Third row:
Left: AIDS counseling plays an increasingly important role in managing and living with the disease. Right: AIDS Project Los Angeles executive director Craig E. Thompson and caseworker help patients order their affairs and learn to live with the disease.

Fourth row:
In 2000, the United Nations Development Programme honored four people for their extraordinary work in the fight against HIV/AIDS: a mother from Malawi, a Catholic priest from Poland, a journalist from French Polynesia, and a psychologist from Nicaragua.



The global fight against HIV and AIDS is going to require coordinated effort, extensive research, and a great deal of money. The United States is pressing ahead on all three fronts.

🌐 President George W. Bush has created a high-level

task force on HIV/AIDS, headed by Secretary of State Colin Powell and Secretary of Health and Human Services Tommy Thompson. The task force will coordinate the Administration's responses to all aspects of the domestic and international HIV/AIDS crisis.

In April 2001, President Bush announced U.S. support for the newly established Global Fund to Fight AIDS, Tuberculosis, and Malaria. The U.S. has committed \$1.6 billion to the fund to date. In January 2003, President Bush announced a five-year Emergency AIDS Relief Plan, which would provide \$10 billion in new funding for international AIDS programs.

The U.S. National Institutes of Health has created two worldwide networks of clinical sites where research on HIV and AIDS will be conducted. One, the HIV Vaccine Trials Network, will test and evaluate candidate vaccines at eleven sites in the United States and eight sites in Africa, Asia, South America, and the Caribbean. In addition to carrying out clinical studies, staff members will work through community organizations to educate people about HIV and vaccine research, and to encourage participation in clinical trials of vaccines.

The second, the HIV Prevention Trials Network, will explore ways other than vaccines to prevent the transmission of HIV. This network will focus its research efforts on antiretroviral therapy, preventing mother-to-child transmission, microbicides, sexual behaviors, substance abuse, and how to control other sexually transmitted diseases. This work will be done at eight sites in the United States and twelve in Africa, Asia, Eastern Europe, and South America.

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In 2002, the NIH budget for research on HIV and AIDS was nearly \$2.5 billion, representing a 19.5 percent increase over the previous year. Research results from this program are applicable worldwide, but NIH also spends \$222 million on international AIDS research programs. These programs are specifically designed to develop and expand treatment and care protocols.

The U.S. Agency for International Development (USAID) has spent \$2.3 billion since 1986 on HIV and AIDS projects in 50 developing countries. The agency estimates that nearly 70 percent of this assistance has gone to small community-based organizations close to those hardest hit by the epidemic.

Among the most important of USAID's programs are those that focus on mother-to-child transmission of HIV, as well as the care and treatment of AIDS-related illnesses. The most deadly of these is tuberculosis, which accounts for 35 percent of all AIDS deaths in sub-Saharan Africa. TB and other opportunistic infections can be treated with medicines the agency is helping to provide.

Another program concentrates on assistance for orphans and other vulnerable children. These projects—more than 40 of them in 18 countries—provide care and some elements of physical support, as well as counseling and psychological support.

During the past five years, USAID has also worked with host country governments and community groups to provide education about HIV and AIDS. It has trained more than 180,000 counselors and educators, who have then taken their message to an estimated 25 million people.

As part of its other prevention efforts, USAID has distributed more than one billion condoms and has worked to develop new technologies for voluntary, confidential HIV testing. This testing, combined with quality counseling leads to a sustained reduction in risky behaviors, thus helping people protect themselves and their partners.

In 2003 USAID's budget for bilateral AIDS activities is \$510 million, nearly a 24 percent increase over the previous year. In addition, USAID resources for field programs are \$389 million.

The Peace Corps has also begun addressing ways in which it can help alleviate the many health, social, and economic problems associated with HIV and AIDS. As a start, all 2,400 Peace Corps volunteers serving in 25 countries in Africa will be trained to educate others in HIV/AIDS prevention and care.

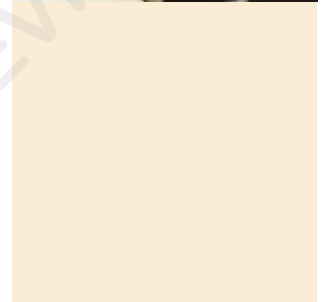
Working with African militaries, the Department of Defense helps to create policies for dealing with HIV/AIDS within a military setting and for prevention education programs that reach both troops and local communities.

The U.S. Department of State, through its various offices and public diplomacy programs, is sponsoring education and prevention programs throughout the world, and is working through U.S. embassies to strengthen political commitment for national leaders to do more.

"In this global war against AIDS," U.S. Secretary of State Colin Powell told the UN General Assembly, "everyone can and must be a leader. Everyone can and must be an ally. We are all vulnerable—big nations and small, the wealthy and the poor."

"We cannot let AIDS divide us. My country is ready to work with all nations to build a global coalition of action against this common foe."

U.S. SECRETARY OF STATE COLIN POWELL



Top row:
Left: Babies orphaned by AIDS are cared for at the Shepherds Keep Orphanage in Durban, South Africa. Right: A worker for CARE International educates young men about condom use in Niamey, Niger.

Second row:
Left: Dr. Mark Ottenweller, who is with HOPE Worldwide, Africa, holds a young HIV-positive girl. Right: In a tuberculosis isolation hospital in the Tokyo suburbs, a Japanese doctor examines a patient. Due to widespread ignorance about the long-forgotten disease, TB has made a sharp comeback in Japan.

Third row:
Left: John Nkengasong, a Cameroonian virologist trained in Belgium, is committed to working in Africa. Right: At the National Institutes of Health in Washington, D.C., doctors Thomas Folks and Guide Poli discuss their AIDS research.

Fourth row:
The Minister of Health launched South Africa's modernized national AIDS Helpline in 2001. The lifeline offers toll-free help 24 hours a day by especially trained counselors using the computerized call center.



Small community organizations are closest to those hardest hit by the epidemic, including children and orphans.

The accessibility of **anti-HIV drugs**—the **difference between** an extended life and impending death—reflects the imbalance between **the fate of AIDS patients** living in wealthy nations and those in the developing world. Several new initiatives, however,

are making antiretroviral drugs available to more people in developing nations. One obstacle to widespread access to effective treatment—the high price of HIV/AIDS medications—has been significantly reduced. Through the Enhanced Access Initiative the United Nations, the World Health Organization, and pharmaceutical companies have worked together to successfully bring down the costs of antiretroviral therapy from over \$10,000 to \$350 per person per year in those countries most affected. Additionally, pharmaceutical companies and the Global Fund are working to make appropriate treatment of HIV/AIDS and opportunistic infections more widely available. Under the U.S. Emergency AIDS Relief Plan, better access to treatment and more healthcare capacity should help people living with HIV/AIDS get appropriate care.

This fund, a public-private partnership that will direct money to countries that need it most, was formally launched at the G-8 Summit in Genoa in July 2001. The \$2.4 billion fund has now awarded over \$1.6 billion in grants. The United States gave an initial \$200 million to the fund, and then increased its contributions to a total of \$500 million through 2003. President Bush announced that he will make as much as \$1 billion per year available to the fund over the next five years.

“The United States is committed to working with other nations to reduce suffering and to spare lives,” President Bush said as he announced the contribution. “And working together is the key. Only through sustained and focused international cooperation can we address problems so grave and suffering so great.”

Another major problem in developing countries has been how to provide the best care possible. To address this need, the Academic Alliance for AIDS Care and Prevention in Africa, a group of prominent African and Western physicians, began construction in 2001 of a state-of-the-art AIDS clinic in Kampala, Uganda, at the Makerere University Medical School. The clinic will train medical personnel from across the continent in the latest treatment and care methods.

“We expect to train at least 80 clinicians per year in the latest AIDS treatment techniques,” says Nelson Sewankambo, Dean of the Medical School, “and as they return to their posts in Uganda and other African countries they will, in turn, train many more doctors and other medical personnel. Once the facility is fully operational, we also expect to treat up to 50,000 HIV/AIDS patients with the kind of care that is available in the developed world but not yet widely used in Africa.” He said patients will pay whatever they can, with many expected to pay nothing.

Private drug companies have also made efforts with governments and community-based organizations in the fight against HIV/AIDS. The key to effectiveness is to build local infrastructure and enhance capacity so that products reach those who need them most. Companies like Merck Pharmaceuticals have provided \$50 million over five years to supplement Botswana’s national response in the areas of education, care, support and treatment of HIV/AIDS. Bristol-Myers Squibb’s \$115 million, five-year Secure the Future Program is helping to address the needs of women and children affected by AIDS in countries in southern and west Africa. A multi-million dollar program by Abbott Pharmaceuticals is working to improve local healthcare services for children affected by AIDS and provide HIV counseling and education in Tanzania, Burkina Faso, India, and Romania. In addition, the GlaxoSmithKline programs in 27 developing nations help community-based organizations increase their capacities to deliver HIV education, prevention, care, and support.

International businesses are also joining the fight. The Global Business Council on HIV and AIDS, founded in 1997, is persuading some of the world’s largest corporations to use their knowledge—and funding—to help defeat the epidemic. With funding and support from the U.S. government, pro basketball player Dikembe Mutombo is building a hospital in Kinshasa to help persons living with HIV/AIDS. In a recent speech, Secretary of State Colin Powell exhorted corporate leaders:

“I strongly encourage the CEOs...to develop AIDS policies suitable for the countries in which your companies operate.... Business leaders can also act as force multipliers, by reaching to opinion leaders in government and throughout the countries, the societies in which you are working, in which you have a business presence. Working together—in that way, you can break the silence and remove the stigmas from those who are infected.”

Even with such powerful allies, the struggle will be long and difficult. **Scientific research, large sums of money, individual courage, political leadership, and the capacity of human beings to reach out to those in need have changed the equation.** Infection with HIV is no longer an immediate sentence of death. People are surviving, continuing to live, although no one knows for how long. We continue to run the risk of increased resistance to the new triple therapy medications, and new and continuing research to find more effective treatments and eventually a cure is paramount.

The objective now is to hasten the day when no one with HIV or AIDS is left untreated or uncared-for, **anywhere** in the world. **Our collective goal is a cure.**



Top row:
Left: Bottles line the counter in Cipla's Quality Control Department in Bombay, India. Doctors Without Borders will distribute the AIDS therapy drugs at no charge to the patient. Middle: Ugandan and U.S. AIDS researchers receive the first shipment of the anti-HIV drug nevirapine at their lab in Kampala in 2000. Nevirapine is effective in arresting AIDS transmission from mother to baby. Right: In 2002, former President Jimmy Carter and Bill Gates, Sr. and his wife, talk to Nigerian President Olusegun Obasanjo while on a three-country trip to Africa to focus attention on HIV and AIDS prevention.

Second row:
British musician Robbie Williams drives a crane fitted with a demolition ball to demolish a wall representing the stigma and silence that surrounds HIV/AIDS on Britain's World AIDS Day.
Third row:
Left: In Ethiopia, Sister Marienella cares for an HIV-positive baby boy. Middle: In Rio de Janeiro, Sister Angela gives medicine to an HIV-positive child at an AIDS hospice. The hospice participates in a government program in Brazil that distributes a "cocktail" of anti-AIDS drugs free. Right: Young people gather outside The Love Train, a sexual health education center and clinic on rails in South Africa, sponsored by the loveLife initiative.
Fourth row:
Liu Ziliang, the first HIV-positive man in China to use his real name, promotes AIDS prevention in Nanjing.